LIST OF FISHES COLLECTED IN THE RIVER PEI-HO, AT TIEN-TSIN, CHINA, BY NOAH FIELDS DRAKE, WITH DESCRIPTIONS OF SEVEN NEW SPECIES.

By James Francis Abbott.

The fishes comprising the collection described in the following paper were obtained from the Pei-Ho River in 1898 by Dr. Noah Fields Drake, professor of geology in the Imperial University of Tien-Tsin, China, and by him presented to the zoological museum of the Leland Stanford Junior University. Specimens of the new species described in this paper have been deposited in the U. S. National Museum. The writer is indebted to the courtesy of President David Starr Jordan and Prof. Charles Henry Gilbert, of Stanford University, for the privilege of working over the collection. He is also indebted to Mr. Kinichiro Mayeda for material assistance.

The following species are described as new:

1. *Toxabramis argentifer.*
2. *Culticula emmelas.*
3. *Pseudogobio drakei.*
4. *Leuciscus sciistius.*
5. *Parapelecus machærius.*
6. *Culter tientsinensis.*
7. *Salanx hyalocranius.*

FAMILY SILURIDÆ.

PARASILURUS ASOTUS (Linnæus).

Four specimens, length: 270, 280, 255, and 110 mm. The band of vomerine teeth continuous in the larger specimens, interrupted in the smaller one.

PSEUDOBAGRUS VACHELLII (Richardson).

Seventeen young specimens, average l. 85 mm. Maxillary barbel does not reach end of head. Occipital process very narrow.

FAMILY CYPRINIDÆ.

CARASSIUS AURATUS (Linnæus).

Eighteen specimens, l. 80 mm. to 160 mm. D. III, 16–17. A. III, 5–6. Head, $3\frac{3}{4}$; depth, $2\frac{2}{5}$.

CYPRINUS CARPIO (Linnæus).

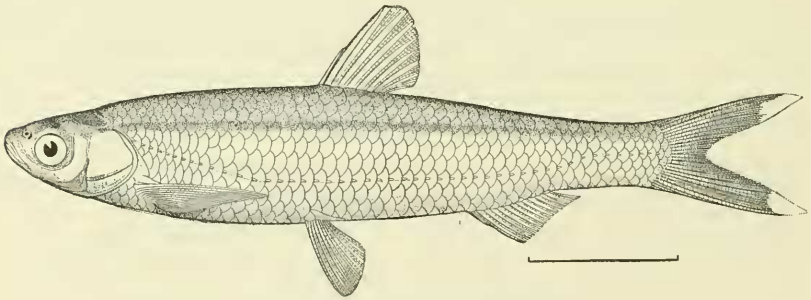
Six specimens, l. 70 mm. to 145 mm.

ACHEILOGNATHUS IMBERBIS Günther.

Sixteen specimens, average l. 82 mm. D. II, 13. A. II, 10.[1] Scales, 4–35–6. Pharyngeal teeth serrate; no barbels. There is quite a prominent anal papilla, lying between the ventrals and usually equaling them in length.

TOXABRAMIS[2] ARGENTIFER Abbott, new species.

This genus apparently closely resembles the two genera *Hemiculterella*, Warpachowski,[3] and *Hemiculter*, Bleeker,[4] but in the latter the pharyngeal teeth are in three series, and in the former there is no thickened second dorsal spine and the abdomen is not trenchant anteriorly. However, many of the numerous genera in this family appear to rest upon very weak foundations, and it is likely that a comparative and critical study of the material that recent years have afforded will reduce the number recognized.



TOXABRAMIS ARGENTIFER, NEW SPECIES.

Description.—Head, $4\frac{2}{3}$ in length to base of caudal; depth $4\frac{1}{2}$, eye 4 in head. (D. II, 7.) (A. I, 13.) Scales 8–44–3. Pharyngeal teeth hooked at tip, 5.3–3.4. Body elongate, dorsal outline straight. Head triangular, snout moderate, 4 in head. Mouth terminal, small and narrow, the lower jaw slightly projecting. Maxillary reaching to vertical from nostrils. Lateral line sharply decurved above pectorals,

[1] See Bleeker, Memoir sur les Cyprinoïdes de Chine, Amsterdam Academy, 1871.

[2] [Type, *Toxabramis swinhonis* Günther; Ann. and Mag. Nat. History 1873, p. 249.]

[3] Bull. Acad. Sci. St. Petersbourg XXXII, p. 23.

[4] Cyprinoïdes de Chine.

rising again abruptly at end of anal to middle of caudal peduncle. Dorsal nearer tip of snout than root of caudal by a distance equal to diameter of eye, arising almost even with ventrals; second spine rather stout, weakly serrated. Origin of anal a trifle beyond perpendicular from tip of dorsal. Pectoral equal to head in length, not reaching ventral. Color silvery, darker above. Length 130 mm.

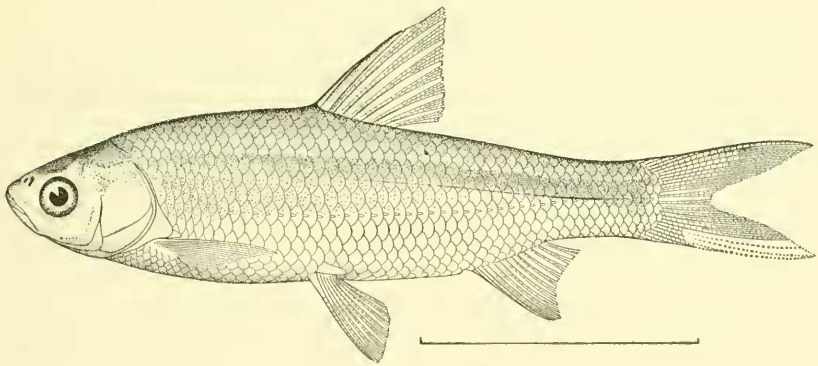
Type.—No. 6299 in Leland Stanford Junior University Museum; also No. 49545, U. S. N. M.

CULTICULA Abbott, new genus.

Distinguished by the following set of characters: Teeth in one row, 6 or 5–5, knife-shaped, not hooked. Abdomen keeled between ventrals and anal, the scales not running across. Dorsal inserted a little behind ventrals, with 7 branched rays, preceded by 2 spines, the second of which is strong and smooth. Anal inserted below tip of depressed dorsal; rays II, 11. Lateral line complete; curved downward; extending along middle of caudal peduncle. Scales large, 47 in lateral series; 8 between lateral line and dorsal fin. Air-bladder large, with median constriction. Alimentary canal long; folded many times. Peritoneum black. Sides with a straight, dark, lateral band equal in width to diameter of eye.

CULTICULA EMMELAS Abbott, new species.

Dorsal, II, 7. Anal, II, 11. Scales, $8\frac{1}{2}$–47–$4\frac{1}{2}$. Body elongate elliptical, both outlines equally curved. Depth 4 in body length to



CULTICULA EMMELAS, NEW SPECIES.

base of caudal. Head $4\frac{2}{5}$ in body, acute, the eye median, anterior, 4 in head, about equal to snout. Interorbital a little more than one-third the length of the head. Mouth terminal, lips thin. Pharyngeal teeth, knife shaped, not hooked, 6 or 5–5. Pectoral rather short, about a pupil's length shorter than head. Ventrals inserted under dorsal, the latter inserted nearer tip of snout than root of caudal by distance equal to snout. Lateral line arises at upper limit of opercle

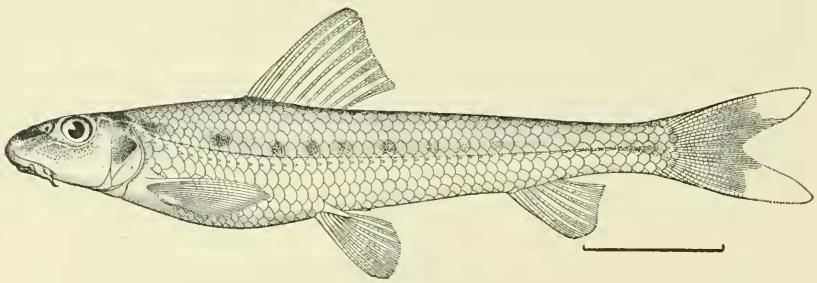
and descends rather abruptly to below middle of body, rising again to middle of caudal peduncle. Abdomen keeled between ventrals and anal, the scales not running across. Anal inserted below tip of dorsal. Caudal deeply forked. Color uniform yellowish brown, silvery, with a pale greenish longitudinal stripe the width of the eye, above the middle of body. Fins pale. Length 70 mm.

Type.—No. 6295 in Leland Stanford Junior University Museum; also No. 49546, U. S. N. M. Three cotypes (No. 6296) average about 90 mm. in length.

PSEUDOGOBIO DRAKEI Abbott, new species.

This species is closely related to *P. esocinus* (Schlegel), from which it differs in the shorter snout and smaller scales. From *P. sinensis* it is easily separated by the much more anterior position of the dorsal.

D. II, 9; the first spine very short. A. 8. Scales 7–46–6. Pharyngeal teeth 5–5, sharply hooked. Body rounded and elongate, depth $5\frac{1}{2}$ in body length. Head 5 in length. Snout rather elongate, but not



PSEUDOGOBIO DRAKEI, NEW SPECIES.

greatly produced with reference to the position of the eye as in *P. esocinus;* $2\frac{1}{3}$ in head. Eye $4\frac{1}{3}$ in head, placed about midway between extremities of snout and opercle. Interorbital $3\frac{1}{2}$. Top of head flat, snout obtusely rounded. Barbel as long as eye. Distance from origin of dorsal to tip of snout; $2\frac{2}{3}$ in body. A narrow greenish band along sides, just above lateral line, in which is a series of a dozen or more darker spots. Top and sides of head tinged with brown. Fins unspotted. Length, 140 mm.

Type.—No. 6303 in Leland Stanford Junior University Museum; also No. 49547, U. S. N. M. Twelve cotypes (No. 6304) average in length 90 mm.–110 mm.

PSEUDOGOBIO SINENSIS (Kner).

Four specimens, two about 85 mm. long and two very young. Five stripes across tail, four across dorsal.

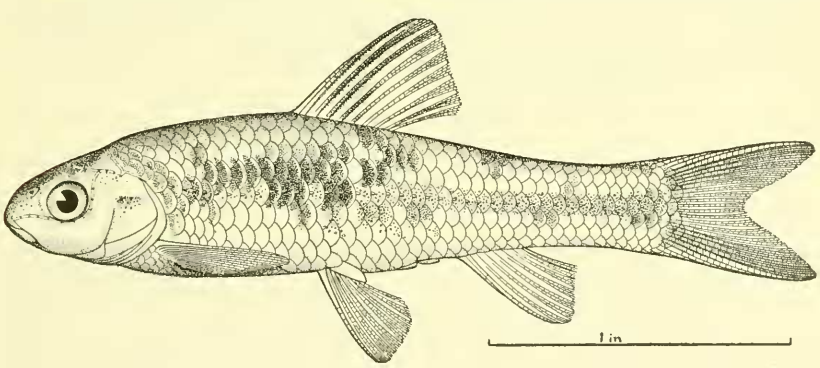
HEMIBARBUS BARBUS (Schlegel).

Four specimens, l. 140, 160, 180, and 300 mm. This is evidently the *Barbus schlegelii* of Günther,[1] though differing slightly from his and Schlegel's descriptions. Dorsal III, 7, the first spine minute. Anal 8. The Tien-Tsin specimens differ markedly from the descriptions in coloration. The ground tint is (in alcohol) a pale pinkish yellow, thickly and irregularly sprinkled above and on sides with small brown dots. A series of larger spots about the size of the pupil runs along the side just above the lateral line. A similar series on back. Dorsal and caudal spotted. Other fins pale. We have accepted Günther's conclusions regarding Schlegel's statements concerning the pharyngeal teeth. These are in three series in the Pei-Ho specimens.

LEUCISCUS SCIISTIUS Abbott, new species.

This species appears to resemble *Gobio nigripinnis* and *Gobio nitens* of Günther.[2] All three species appear to be separated from other Leuciscids by the short few rayed anal and single tooth in the inner series of pharyngeal teeth, but the material is too scanty to afford any very definite data.

Dorsal 10, anal 8, scales $4\frac{1}{2}$–38–$3\frac{1}{2}$. Depth $4\frac{1}{2}$, head 4, caudal peduncle width 9 in body. Snout $3\frac{1}{3}$, eye 4, interorbital $3\frac{1}{5}$ in head. Pre-



LEUCISCUS SCIISTIUS, NEW SPECIES.

orbital 2 in snout. Head blunt and rounded, dorsal out parabolic; mouth small, inferior; maxillary protractile; barbels none. Pharyngeal teeth 5.1–1.5, hooked at tip.

Origin of dorsal nearer tip of snout than root of caudal by distance equal to that between lateral line and first dorsal ray. Pectorals about $4\frac{1}{2}$ in body. Ventrals inserted under posterior half of dorsal and not quite extending to anal. An anal papilla is present.

Color light yellowish brown with or without irregular groups of

[1] Catalogue VII, p. 135. [2] Ann. and Mag. of Nat. Hist., 1873, p. 246.

dots or blotches of dark brown, especially along lateral line; dorsal dark. Length 67 mm.

Type.—No. 6301 in Leland Stanford Junior University Museum. Two cotypes (No. 3202) about same length; one of these is numbered 49548, U. S. N. M.

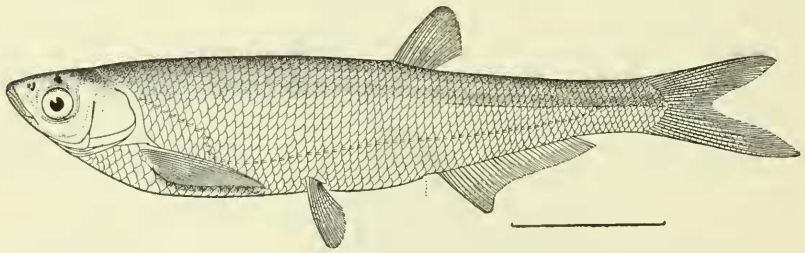
ELOPICHTHYS BAMBUSA (Richardson).

One specimen. l. 180 mm. D. 11; A. 12. Ventral I, 9. Lateral line 96. Maxillary extending to below orbit. Caudal very deeply forked. The post-ventral portion of the abdomen is not compressed. Height of dorsal five-sixths of depth of body. Pharyngeal teeth 4.4.1–2.4.4.

PARAPELECUS MACHÆRIUS Abbott, new species.

Very close to *Parapelecus argenteus* Günther,[1] differing especially in the pharyngeal dentition and the longer anal and pectoral fins.

D. 10; A. 29. Lateral line 68. Depth $4\frac{1}{3}$, head $5\frac{1}{5}$; eye $3\frac{3}{4}$ in head. Head and body very strongly compressed. Snout very acute. Maxillary reaching level of nostril, mouth strongly slanted. Pharyngeal teeth hooked; 4. 4. 2.–2. 4. 4. Dorsal outline straight, ventral strongly arched, the whole edge trenchant. Pectorals long and narrow, terminating at a distance from the root of the ventrals, equal to the diameter of the eye; longer than head. The lateral line makes an abrupt descent at about the eighth pore, rising again at the end of the anal, to the middle of the tail, the anterior mucus tubes with a vertical branch as described for *P. argenteus*. Dorsal short, beginning midway between root of caudal and end of opercle, its last ray on the verticle from first ray of anal. Ventrals somewhat nearer to snout than to root of caudal. Color silvery, darker above. Length 130 mm.



PARAPELECUS MACHÆRIUS, NEW SPECIES.

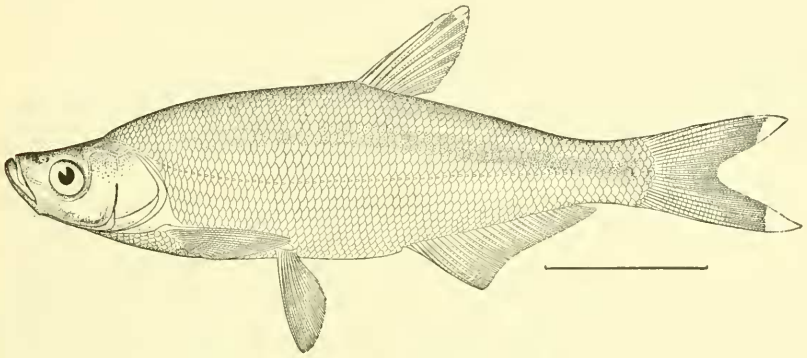
Type.—No. 6307 in Leland Stanford Junior University Museum; also No. 49549, U.S.N.M.

[1] Ann. and Mag. of Nat. Hist., 1889, p. 227.

CULTER TIENTSINENSIS Abbott, new species.

Very closely allied to *Culter brevicauda*, Günther, from which it differs in pharyngeal dentition.

Dorsal II, 7. Anal 28; head 4, depth 3½ in body; eye 4 in head, somewhat shorter than snout, a very little greater than interorbital. Maxillary equal to snout, 3⅓ in head, not quite reaching to verticle from anterior margin of eye; mouth with a strongly verticle slant. Preorbital broad, 2 in eye. Pharyngeal teeth rather small, 4. 3. 1.–1. 3. 4. Gill rakers fine and close set, one-half of eye in length. Top of head flat. Dorsal outline strongly arched, giving the fish a sort of humpbacked appearance. Lateral line 60, almost straight without downward curvature. Dorsal nearer root of tail than tip of snout by



CULTER TIENTSINENSIS, NEW SPECIES.

about the length of the eye; second spine, stout, smooth, 1⅔ in head. Pectoral 1⅕ in head, reaching to ventrals. Abdomen trenchant from anus forward to insertion of pectorals. Coloration pale, a bluish stripe following the outline of the back about midway between lateral line and dorsal margin. Top of head dark. Length 120 mm.

Type.—No. 6297 in Leland Stanford Junior University Museum; also No. 49550, U.S.N.M.

MISGURNUS ANGUILLICAUDATUS (Cantor).

Four adults, l. 200–250 mm., and 63 smaller specimens, av. l. 100 mm. D. 8 or 9. A. 7. V. 6.

A very common fish in the stagnant waters of Japan and China. It has the remarkable habit of leaving the water and coming ashore in search of food, especially after a rain. Kept in a damp place it will live two or three days out of its element. The number of the black spots appears to vary considerably with the nature of the environment, and this is especially noticeable in the young stages.

FAMILY ENGRAULIDIDÆ.

COILIA NASUS Schlegel.

Sixteen specimens, 50 mm. to 140 in length. The length of the premaxillary, as Kner observes,[1] appears to be too variable to be of taxonomic importance. In the smaller specimens it usually does not extend to the limit of the opercle, but in the larger ones it frequently exceeds it.

FAMILY HEMIRAMPHIDÆ.

HEMIRAMPHUS INTERMEDIUS (Cantor).

Four specimens, l. 130 to 160 mm.

FAMILY TETRAODONTIDÆ.

LAGOCEPHALUS OCELLATUS (Osbeck).

Two specimens, l. 75 mm.

FAMILY OPHIOCEPHALIDÆ.

OPHIOCEPHALUS ARGUS Cantor.

Two specimens, l. 85 mm. Head $3\frac{1}{6}$, snout $5\frac{1}{2}$. Dorsal 47–48.

FAMILY POLYACANTHIDÆ.

POLYACANTHUS OPERCULARIS (Linnæus).

Three specimens, length about 40 mm. Uniform dusty brown, darker above with a dark spot on opercle.

FAMILY SALANGIDÆ.

SALANX HYALOCRANIUS Abbott, new species.

This species, which is represented by a great number of specimens, appears to be clearly distinct from *Salanx chinensis* Osbeck or *Salanx reevesii* Cuvier and Valenciennes, which is apparently the same. It is separated from both by the constantly greater number of both dorsal and anal rays. In *S. hyalocranius* both ventral and dorsal are more anterior than in *S. chinensis*, the dorsal in the latter lying above the anal, while in *S. hyalocranius* it is in advance of that fin. In the species at hand the distance from snout to ventrals is about $2\frac{2}{5}$ of body length, while in Steindachner's figure of *S. chinensis*[2] it is about $2\frac{1}{6}$.

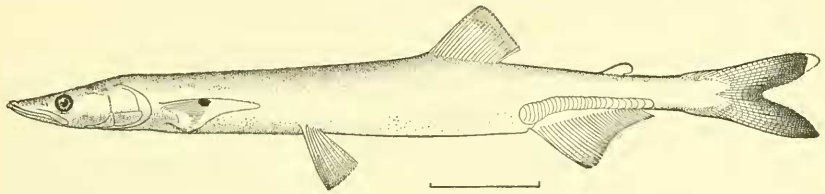
In the account of *S. reevesii*, the dorsal base is said to lie its own length in advance of anal.

Description.—In *Salanx microdon*, as in *S. chinensis*, the number of pectoral rays is about 16. The teeth in *S. microdon* are even smaller than in *S. chinensis*.

[1] Novara Fische, p. 335.

[2] Ichthy. Notizen.

Dorsal 16. Anal 30. Head $4\frac{1}{2}$; depth (at anal) $2\frac{1}{7}$ in head. Snout $2\frac{3}{5}$; eye 6 in head. Depth of head about 2 in its greatest breadth, which latter is equal to the distance from tip of snout to center of pupil. Interorbital $3\frac{1}{4}$ in head. Mouth large and broad, the lower jaw projecting. Teeth in both jaws rather moderate in size, larger at symphysis, strongly recurved, none of the teeth piercing the upper jaw. Tongue toothed. Skull hyaline, all the details of the brain showing clearly even in alcoholic specimens. Pectorals with 27 or more rays, the base of the fin fleshy. Ventrals inserted $2\frac{2}{3}$ of body length from snout. Anal large and prominent, its base about $1\frac{1}{5}$ of the length of head, two-thirds of head in height. Caudal peduncle slender, caudal deeply forked. End of dorsal base on the verticle from first ray of anal about $1\frac{2}{5}$ of head in length, its longest ray $1\frac{1}{3}$ of head. Adipose fin very small, placed above end of anal. Body



SALANX HYALOCRANIUS, NEW SPECIES.

apparently naked, with the exception of a single row of about 25 large, closely imbricate, and deeply embedded scales running just above anal on either side of the body. Body colorless. Caudal fin washed with dark brown. Length 145 mm.

Type.—No. 6305 in Leland Standford Junior University Museum.

In a large number of cotypes (No. 6306), ranging from very young to 180 mm., the dorsal runs to 17 and occasionally to 18, and the anal varies from 28 to 31; also No. 49551, U.S.N.M.

This species is probably identical with *Eperlanus chinensis* Basilewsky, from Pekin, but the name *chinensis* is already used for the "Whitebait of Macao." Specimens of this species have also been received by Mr. Otaki from a stream in Korea.

FAMILY GOBIIDÆ.

GOBIUS GIURIS Buchanan-Hamilton.

Fourteen specimens; average length 40 mm.